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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,779	11/05/2001	Hakan Ozdemir	01-S-046 (1678-48)	7603

30431 7590 01/09/2006  
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EXAMINER
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RODRIGUEZ, GLENDA P

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/993,779

Applicant(s)

OZDEMIR, HAKAN

Examiner

Glenda P. Rodriguez

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5, 21-42, 49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) 6-20 and 43-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 21-42, 49 and 50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 6-20 and 43-48 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/26/05.

2. Regarding the Arguments made by the Applicant as the reason for traversing the Restriction, the Examiner cannot concur with the Applicant because Groups II and III deal with specific components that can be found not only in a magnetic medium channel, but in transmission media channels as well. Therefore, the restriction is made final. Only Group I, as elected by the Applicant, will be examiner and the other Claims are withdrawn from consideration.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 5, 38, 49 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Osada (US Patent No. 5, 291, 464).

Regarding Claim 1, Osada teaches a head-connection-polarity detector, comprising:

A circuit operable to recover servo data from a servo signal generated by a read-write head that is coupled to the circuit with a connection polarity (Osada teaches

in Fig. 7 along with its description the circuit in which the polarity of the signal (being it signal Sa or Sb) along with the inverting circuit in which it inverts the polarity once the polarity of the signal is determined.); and

A determinator coupled to the circuit and operable to determine the connection polarity from the recovered servo data (See Fig. 7 along with description, wherein it determines which is the direction of the polarity of the signal and wherein it inverts the polarity if required.).

Method claim (38) is drawn to the method of using the corresponding apparatus claimed in claim (1). Therefore method claim (38) corresponds to apparatus claim (1) and is rejected for the same reasons of anticipation as used above.

Regarding Claim 3, Osada teaches all the limitations of Claim 1. Osada further teach wherein the determinator is operable to generate a signal that indicates the determined connection polarity (See Description of Fig. 7, especially Col. 9, L. 35-49 and See also Summary of the Invention).

Regarding Claim 5, Osada teaches all the limitations of Claim 1. Osada further teaches wherein the circuit is operable to recover the servo data from the servo signal regardless of the connection polarity (In Fig. 7, it teaches an inversion circuit in which no matter the previous polarity, it then proceeds and inverts to the next polarity, therein making it able to compensate to the polarity required by the data in the disk.).

Regarding Claim 49, Osada teaches a method, comprising:

Sampling a servo signal having a phase (See Abstract, wherein it mentions detecting 2 phases);

And recovering servo data from the servo signal regardless of the phase of the servo signal (Because it needs both Sa and Sb, which are servo data according to Col. 8, 47-53 in order to control the speed/position, then it requires the servo data regardless of the phase in order to perform the process according to Col. 1, L. 61 to Col. 2, L. 2, Summary of the Invention and Fig. 7, along with its Description.).

Regarding Claim 50, Osada teaches a method comprising:

Sampling a servo signal having a phase (Abstract and Col. 8, L. 47-53. It is inherent that if the signal is for positioning and speed control, then it is a servo signal.);

Determining the phase of the servo signal (See Abstract and Summary of the Invention along with Fig. 7, with its Description);

Generating the samples of the servo signal if the phase is a first value (See Fig. 7 along with its Description, wherein it mentions that when sampling the signals from both polarities in order to determine its connection polarity.); and

Inverting the samples of the servo signal if the phase is a second value (See Fig. 7 along with its Description, wherein it mentions that when sampling the signals from both polarities in order to determine its connection polarity.).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 4, 21-23, 27, 29, 31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osada in view of Reed (US Patent No. 6, 144, 513).

Regarding Claim 2, Osada teach all the limitations of Claim 1. Even though Osada mentions the servo data detection in Col. 8, L. 47-53, Osada does not further teach of a servo synchronization mark. This limitation is taught by Reed et al. wherein the circuit is operable to recover a servo-synchronization mark from the servo signal (Col. 4, Lines 54-67 and Col. 7, Lines 33-38 and Col. 9, Lines 50-59. Reed et al. teach a circuit that receives inputted data from the head and detects the polarity of the servo signal from that data.); and the determinator is operable to determine the connection polarity from the recovered servo-synchronization mark (Col. 4, L. 54-67 and Col. 11, L. 54-67. Reed et al. teach of a circuit that determines if the polarity pulses are positive or negative.). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Osada's invention with the teaching of Reed et al. in order to detect and compensate for servo data as explained in the Summary of the Invention.

Regarding Claim 4, Osada teaches all the limitations of Claim 1. However, Osada does not teach wherein a Viterbi detector. This limitation is taught by Reed et al., wherein the circuit comprises a Viterbi detector in Col. 4, L. 67 to Col. 5, L. 3.

Regarding Claim 21, Osada teaches a head connection polarity detector, comprising:

A comparator operable to determine the connection polarity from the recovered synchronization mark (See Summary of the Invention, wherein it describes both servo signals and a procedure with how they use the phases in order to compare and invert its polarity.)

However, Osada does not teach wherein a Viterbi detector. This limitation is taught by Reed et al., wherein the circuit comprises a Viterbi detector in Col. 4, L. 67 to Col. 5, L. 3. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Osada's invention with the teaching of Reed et al. in order to detect and compensate for servo data as explained in the Summary of the Invention.

Claim (27 and 33) have limitations similar to those treated in the above rejection, and are met by the references as discussed above. Claim (27 and 33) however also recites the following limitations: "a sampling circuit (See Abstract of Osada wherein it teaches the signals being sampled, therefore it is obvious that a sampling circuit is within the device)".

Regarding Claim 22, the combination of Osada and Reed et al. teach all the limitations of Claim 21. Osada further teach wherein the determinator is operable to generate a signal that indicates the determined connection polarity (See Description of Fig. 7, especially Col. 9, L. 35-49 and See also Summary of the Invention).

Regarding Claim 23, the combination of Osada and Reed et al. teach all the limitations of Claim 21. Osada further teaches wherein the circuit is operable to recover the servo data from the servo signal regardless of the connection polarity (In Fig. 7, it teaches an inversion circuit in which no matter the previous polarity, it then proceeds and inverses to the next polarity, therein making it able to compensate to the polarity required by the data in the disk.).

Regarding Claims 29 and 34, the combination of Osada and Reed et al. teach all the limitations of Claims 27 and 33. The combination further teach wherein the comparator is coupled to the sampling circuit (Osada teaches in the Abstract that the signals are sampled and see also Summary of the Invention, wherein it describes both servo signals and a procedure with

Art Unit: 2651

how they use the phases in order to compare and invert its polarity); and if the determined phase is opposite to a desired phase, then the sampling circuit is operable to invert the samples of the servo signal (See Summary of the Invention of Osada).

Regarding 31, the combination of Osada and Reed et al. teaches all the limitations of Claim 27. The combination further teach wherein the phase of the servo signal represents a connection polarity between the sampling circuit and a read head that generates the servo signal (See Fig. 7 and Abstract and Summary of Osada).

7. Claims 24, 28 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osada and Reed et al. as applied to claims 21 and 27 above, and further in view of Tuttle et al. (US Patent No. 6, 108, 151).

Regarding Claims 24 and 35, the combination of Osada and Reed et al. teach all the limitations of Claims 21 and 33. However the combination does not teach the following:

The synchronization mark has pairs and only pairs of consecutive logic 0's and logic 1's;

And the Viterbi detector comprises,

A recovery circuit operable to recover the synchronization mark from the samples of the servo signal by,

Calculating a respective path metric for each of no more than two possible states of the binary sequence and determining a surviving path from the calculated path metrics, the binary sequence lying along the surviving path.

However, Tuttle teaches these limitations in the synchronization pairs in Col. 8, Lines 48-51 and Lines 56-59 (Tuttle et al. further teach that the read data is binary data.) and the Viterbi detector with a recovery circuit as Claimed in Col. 4, Lines 54-67 and Col. 7, Lines 33-38 and Col. 9,



Art Unit: 2651

Lines 50-59 (Tuttle et al. teach a circuit that receives inputted data from the head and detects the polarity of the servo signal from that data) and the path metric calculation in Col. 13, Lines 1-60, wherein Tuttle et al. teaches the sampling and coding and processing of code pairs 00, 10, 01, 11. Tuttle et al. teaches determining the path by the use of sampling and further processing of a 2T preamble. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify the combination's invention with the teaching of Tuttle et al. in order to synchronize the servo data according to the polarity being read by the head device.

Regarding Claim 28, the combination of Osada and Reed et al. teach all the limitations of Claim 27. However, the combination does not teach the comparator is coupled to the sampling circuit and the sampling circuit is operable to generate the samples of the servo signal having a desired phase. Tuttle teaches this in Col. 8, Lines 48-51 and Lines 56-59 and Col. 19, Line 65 to Col. 20, Line 11 (Tuttle et al. teaches that the device detects if the desired pulse is positive or negative.).

Regarding Claim 39, the combination of Osada and Reed et al. all the limitations of Claim 38. The combination does teach determining comprises determining the phase of the servo signal from the recovered synchronization mark (See Fig. 7 along with description, wherein it determines which is the direction of the polarity of the signal and wherein it inverts the polarity if required.). However, the combination does not explicitly teach wherein the servo data includes a synchronization mark. Tuttle et al. teaches this limitation in Col. 12, Lines 5-8.

Regarding Claim 40, the combination of Osada and Reed et al. teach all the limitations of Claim 38. The combination further teaches comprising generating a signal that indicates the

Art Unit: 2651

determined phase of the servo signal (See Abstract and Summary of the Invention along with Fig. 7, with its Description of Osada).

Regarding Claim 41, the combination of Osada and Reed et al. teach all the limitations of Claim 38. The combination further teach comprising adjusting the phase of the servo signal to a desired value if the determined phase has an undesired value (See Abstract and Summary of the Invention along with Fig. 7, with its Description of Osada).

7. Claims 25, 26, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osada and Reed et al. as applied to claims 21 and 38 above, and further in view of Cloke (US Patent No. 5, 822, 143).

Regarding Claims 25, 26 and 42, the combination of Osada and Reed et al. teach all the limitations of Claims 21 and 38. However, the combination does explicitly teach wherein the determining comprises, comparing the recovered synchronization mark to an ideal synchronization mark on a bit-by-bit basis, determining that the servo signal is in phase if the number of mismatching bits is less than or equal to a first predetermined threshold, and determining that the servo signal is out of phase if the number of mismatching bits is greater than or equal to a second predetermined threshold. Cloke et al. teaches this limitations in Fig. 1A and Col. 1, Lines 45-48, Lines 53-59 and Col. 1, Line 60 to Col. 2, Line 19. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify the combination's invention with the teaching of Cloke et al. to use a path metric in order to effectively estimate the most likely sequence of symbols.

8. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osada in view of Tuttle et al. (US Patent No. 6, 108, 151).

Regarding Claim 37, Osada teaches a disk-drive system, comprising:

A data-storage disk having a surface and operable to store a servo synchronization mark and other servo data (See Fig. 4, Element 1);

A motor coupled to and operable to rotate the disk (Fig. 4, Element M);

A read head operable to generate a servo signal that has phase and that represents the synchronization mark and the other servo data (See Abstract of Osada);

A read head positioning assembly operable to move the read head over the surface of the disk (See Summary of Invention of Osada); and

A sampling circuit for detecting servo data (See Abstract of Osada),

However, Osada does not explicitly teach a Viterbi detector. Tuttle et al. teaches wherein a Viterbi detector operable to recover the synchronization mark and other servo data from the samples of the servo signal regardless of the phase of the servo signal in Col. 20, Lines 17-22 (See also Col. 12, L.5-60 wherein the phase is corrected in order for the head to make the head be connected as shown in the Applicant's Specification in paragraph [27].).

Claim (36) has limitations similar to those treated in the above rejection, and is met by the references as discussed above. Claim (36) however also recite the following limitations "a second Viterbi detector coupled to the sampling circuit and operable to recover and the other servo data from the samples of the servo signal (Col. 8, Line 67 to Col. 9, Line 2 of Tuttle et al.)".

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-5, 21-42, 49 and 50 have been considered but are moot in view of the new grounds of rejection.

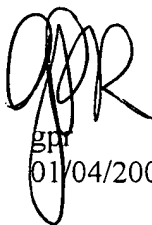
10. Examiner acknowledges that Claims 6-20 and 43-48 have been withdrawn from consideration due to the Election done by the Applicant in the Action dated 9/26/05.


*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (571) 272-7561. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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